SB608 HOMOPTERA 1939 344
.P65
FS
NO.40

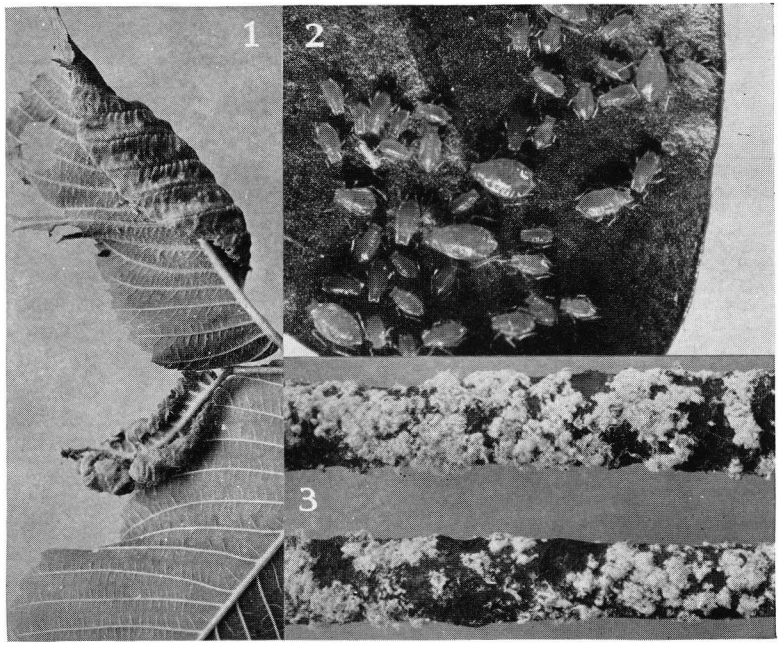
Number 40

Tree Pest Leaflets

FOREST AND SHADE TREE APHIDS

(*Aphiidae*)

Prepared by H. B. PEIRSON, State Entomologist, Maine Forest Service, Augusta, Maine.



Photos by Conn. Agri. Exp. Sta.

Fig. 1—Leaf curl of elm caused by wooly elm aphid.
Fig. 2—Colony of adult and immature, wingless forms on privet leaf.
Fig. 3—Pine bark aphid on small white pine branches.

Edited by a Committee of the SOCIETY OF AMERICAN FORESTERS, NEW ENGLAND SECTION, and published for the cooperators by the Massachusetts Forest and Park Association, 3 Joy Street, Boston.

JULY 1939

Issued jointly through the cooperation of the following agencies:

The State Foresters, State Departments of Agriculture, State Agricultural Experiment Stations, Extension Services, Forest Schools, and Forest and Park Associations of New England and New York, and the Northeastern Forest Experiment Station of the Forest Service, the Division of Forest Pathology of the Bureau of Plant Industry, and the Divisions of Forest Insect Investigations and Plant Disease Control of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture.

FOREST AND SHADE TREE APHIDS

(*Aphiidae*)

Aphids or plant lice are small, soft bodied, sucking insects which may be found on any part of a tree. Few, if any species of trees are free from attack. The importance of aphids as tree pests lies mainly in their tremendous powers of reproduction, due largely to their rapid development and the number of generations a year, as well as to the distinctly morbid effects that many aphids have upon plant tissues.

Injury:—In general, the feeding of plant lice brings about one or more of the following types of injury, all of which tend to weaken or disfigure trees. (1) The formation of galls such as the spruce gall, and cockscomb gall of elm; (2) the curling of leaves such as in the case of the elm wooly aphids, a condition known as pseudogalls; (3) the swelling of woody parts of a tree as in attack by the Balsam Woolly Aphid; (4) leaf injury, evidenced by either discoloration or dropping of foliage; and (5) the excretion of honeydew, and the resultant black sooty mold as in the case of the maple leaf aphid and many other species.

Description:—Aphids are either wingless or with four delicate wings which have very few veins. In general, the body is somewhat pear-shaped, frail, with long antennae, fairly long slender legs, and usually near the posterior extremity of the body a pair of short projections known as cornicles, Aphids are of various colors — green, black, red, brown, white, or gray.

Some species are covered with long, white, waxy threads. The largest aphids are not more than one-third inch in length. In general, the eggs are small, ovoid, and usually black, brown or greenish in color.

Seasonal History:—The life cycle of some aphids is very complicated. Many spend part of their life on one host and appear in a quite different form during the rest of the cycle on a different host. A fairly typical life cycle is as follows: The winter is usually spent in the egg stage in the northern states. In the spring the stem mother hatches from the overwintered egg. She is usually wingless, and gives birth to living young without mating. The stem mothers give rise to several generations of agamic or asexual forms, which are rarely winged. Winged agamic forms may then appear, which fly to the secondary host plant. One or more generations of winged or wingless agamic females are produced on the secondary host plant. After a number of generations, winged migrants appear, which fly back to the primary host. The last generation in the series gives rise to males and oviparous females, which produce the over-wintering eggs. There may be as many as ten or more generations a year.

Artificial Control:—As aphids feed by sucking the juice of plants, they are best controlled by contact sprays. It is necessary to know something of the life history of an aphid to formulate the best means of control, particularly in the case of those aphids having an alternate host. An early spring, dormant, miscible oil or lime sulphur spray will control some species of aphids, such as the spruce gall aphid, pine bark aphid, and woolly elm aphid. Exposed aphids on foliage or twigs may be destroyed by spraying with 40% nicotine sulphate solution at a dilution of 1 part to 800 parts of water. The addition of enough dissolved laundry soap (4 lbs. to 100 gal. of water) to make the water sudsy increases the effectiveness of the spray. A strong force of water from a garden hose is sometimes effective.

Natural Control:—Certain races of species of spruce and fir are reported more susceptible to attack by the spruce gall aphid (Leaflet 1) and the fir bark louse (Balsam woolly Aphid) (Leaflet 11) than others.

Lady beetles (*Coccinellidae*) in both the adult and larval stage feed upon plant lice. The predaceous larvae of lace-wing flies (*Chrysopidae*) and of many syrphid flies (*Syrphidae*) also attack aphids. A few minute

wasp-like insects (*Braconidae* and *Chalcididae*) are parasitic on aphids. Insect eating birds play an important role in aphid control. Bacterial and fungous diseases often destroy all the aphids over large areas.

Climatic conditions, such as heavy rains and cold temperatures, are a major factor in holding aphids in check.

REFERENCES

Hottes, F. C. and T. H. Frison — The Plant Lice, or Aphiidae, of Illinois. The Nat. Hist. Survey Vol. 19, Art. 3; Urbana, Ill. 1931.

Patch, Edith M. Numerous papers published by the Maine Agricultural Experiment Station 1908-1929.

Felt, E. P. Manual of Tree and Shrub Insects, pp. 133-145; 1924.